

A Project Report

on

WASTE: WE ARE SAVING TODAY'S ENVIRONMENT APPLICATION

*Submitted in partial fulfillment of the
requirement for the award of the degree of*

Bachelor of Technology in Computer Science and Engineering



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Under The Supervision of
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CANDIDATE'S DECLARATION

I/We hereby certify that the work which is being presented in the project, entitled **“WASTE: We Are Saving Today's Environment Application”** in partial fulfillment of the requirements for the award of the **Bachelor of Technology in Computer Science and Engineering** submitted in the **School of Computing Science and Engineering** of Galgotias University, Greater Noida, is an original work carried out during the period of July-2021 to December 2021, under the supervision of **Ms. Suman Devi, Assistant Professor, Department of Computer Science and Engineering** of School of Computing Science and Engineering , Galgotias University, Greater Noida

The matter presented in the project has not been submitted by me/us for the award of any other degree of this or any other places.

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This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

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CERTIFICATE

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his/her work is recommended for the award of **BACHELOR OF TECHNOLOGY IN
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Signature of Examiner(s)

Signature of Supervisor(s)

Signature of Project Coordinator

Signature of Dean

Date: DECEMBER, 2021

Place: Greater Noida

Abstract

WASTE – WE ARE SAVING TODAY’S ENVIRONMENT.

It is an app in which we going to deal with daily wastage problem in clear & simple manner or way.

In this modern era solution of everything is present there through internet or other modern things but what about daily wastage created by human or other individual activities. In Urban area this problem doesn't occur as they have their own waste management system but what about the non-urban and small-town areas as they do don't have proper management system. Most of the times we throw normal wastage on the side of the road or at an unusual place, and one by one many of us also throw garbage on that place which leads to a huge collection of garbage waste by which there is an increase in many types of pollution. In India it is most common condition i.e. like in Old Delhi, many UP BIHAR or other state districts including their village and town, Border areas like Haryana-UP border etc.

By using computer science engineering, we can make an app which works with the government anti-pollution services or any other anti-pollution community by which every Indian or other county people can send or tell their problem of pollution(waste) by using videos, photos or other circulating product by giving their location. After sending all the information by the user, the next working part is from the ant-pollution community either private or government which works according to the given location as they are available or not, then they take their action to clean or solve that problem by sending their workers to that place or by using their own tool and machines.

By this activity we would see a change in our social life's, the environment around us will be clean and we can use that hygienic place for different useful purposes.

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Acronyms

SWM	Solid Waste Management
MSW	Municipal Solid Waste
ULBs	Solid Urban Roads
CPCB	Central Pollution Control Board

CHAPTER-1

Introduction

1.1 Introduction

Nowadays, everyone cares about their livelihood for their healthy lifestyle keeping environment around them neat & clean. This healthy lifestyle became a major concern everywhere that if they don't clean their surroundings around them, they will suffer from many diseases. For that government of India introduce Union Ministry of Environment, Forests and Climate Change (MoEF&CC). This ministry controls all over wastage management system in India.

Solid waste is a material that is not useful and does not represent any economic value to its owner. Solid waste management (SWM) is an acute problem for developing countries like India. Escalating incomes, rapidly growing but unintended urbanization, and altering lifestyles leads to increased volumes and varying composition (increasing use of paper, plastic and other inorganic materials) of municipal solid waste in India. Waste is generated from all human activities. The Municipal Solid Wastes (Management & Handling) Rules, 2000 (MSW Rules) implies on every municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid waste. These rules contain four schedules namely implementation schedule, management of municipal solid wastes, specifications for landfill sites and standards for composting treating leachates and composting, etc. (MOEF, 2000). Municipal Solid Waste has been a major issue in developing countries like India. There is rapid increase in population, developmental activities, improvement in the standard of living etc. and thus a simultaneous increase in the generation of wastes which eventually becomes a major environmental, socio-economic and health concern.

In urban local bodies (ULBs) solid waste management (SWM) is a major problem in India, where urbanisation, industrialization and economic growth have resulted in increased municipal solid waste (MSW) generated per person. PPP (Public-Private Partnerships) have been supported by the government of India for improving waste management services, yet they are problematic. The challenges of improving solid waste management services are lacked by lack of financial sources, lack of appropriate skills and technologies competencies with the public sector.

In 2016 MoEFCC launched a web-based application to track and monitor waste management in India. The application, Integrated Waste Management System, collects information and assists in coordinating waste generators, recyclers, operators of disposal facilities and state agencies.

The local corporations have adapted different methods for the disposal of waste – open dumps, landfills, sanitary landfills, and incineration plants, in this the biodegradable waste processed in composting, vermicomposting, anaerobic digestion or any other biological process for stabilization of wastes. Mixed waste containing recoverable resources shall follow the route of recycling. This waste includes food residue, wood waste, paper, textiles, plastics and rubber.

MSW urban cities in India make up 51% of the natural, 17.5% recyclable materials (paper, plastic, metal, and glass) and 31% inert. The moisture content of MSW urban is found to be 47% and the average calorific value was 7.3MJ / kg (1745kcal / kg) (Parvathamma, 2014). In the report of Planning Commission (2014) it was revealed that there are currently 62 million tons of MSW is done annually by 377 million people living in urban areas. This is expected to be increased to 165 million tons by 2031 and increased to 436 million tons by 2050.

1.2 Formulation of Problem

Throughout India, existing systems for collecting, transporting and disposing of solid waste are mixed with turbulence. The problem is particularly acute in urban areas, where fast-growing people produce solid piles of solid urban roads (ULBs) that cannot be managed properly. Improper management of solid waste endangers the environment and public health. This paper outlines the state of solid waste management in India, and offers recommendations for addressing a wide range of challenges.

Currently, 1,27,486 tons per day of solid municipal waste are generated as a result various domestic and other commercial and institutional activities (CPCB, 2012). Municipal waste and certain industrial waste have a significant impact in comparison nature. A large amount of this waste is very dangerous to living being's factors involving people. Nowadays the solution to everything is there with the internet or other modern things but what about the daily wastes done by man or other individual activities. In the Urban area this problem does not occur as they have

their own waste management system but what about non-urban and small areas as they do not have a proper management system.

It stated that generation and management of solid waste may vary from country to country, state to state, city to city as well as within different areas of the same city. They further notified that In Indian cities the solid waste generation varies in the range 0.3 and 0.6kg/capita/day and municipal solid waste generation increase in volume is estimated to be 1.33% per capita annually. In India the most common method used for the management of municipal solid waste is that is disposed of in low lying areas or open dumps without any necessary precautions. It is the reason that municipal solid waste management is one of the most challenging environmental issues here

Most of the time we throw common waste on the side of the road or in an unfamiliar area, and each of us also dumps garbage in that area which leads to a large pile of garbage in which there is a lot of pollution.

In India it is a very common situation i.e., like in Old Delhi, many UP BIHAR or other state states including their town and city, Border areas such as the Haryana-UP border etc.

By using computer science engineering, we can create an application that works with government anti-pollution services or any other anti-pollution community where every Indian or other regional person can post or report their pollution problem (waste) through videos, photos or other revolving product by providing their location.

After submitting all information by the user, the next part of the work comes from the anti-pollution community either private or government based on a given area as it is available or not, and then they take action to clean up or solve the problem by sending their staff to that location or using their tool and equipment.

1.2.1 Tools and technologies used

Tools Used:

Hardware Requirements:

- Processor: Pentium or later processors (2.4 GHz).
- Hard Disk: 10 GB.
- Ram: 4GB or more
- Monitor
- Keyboard & Mouse

Software Requirements:

- Operating system: Windows 7 or later versions.
- Coding Language: Java
- IDE: Android Studio

Technologies Used:

- Native Mobile Apps
 - Java
 - XML (Extensible Markup Language)
- OOPs (Object Oriented Programming)
- Java Collections and Multithreading
- Exception Handling

CHAPTER-2

LITERATURE SURVEY/PROJECT DESIGN

2.1 Literature Survey on Waste

The quantity of waste generated is increasing in rural areas as a result of increased population, consumerism and commercial activities. It is estimated that 15,000 to 18,000 million liters of gray water and 0.3 to 0.4 million metric ton of solid waste are generated each day in rural areas (DDWS-UNICEF, 2008).

A survey by the Energy and Resources Institute has found that almost 90% felt that improper waste management in India posed a moderate to severe health risk, most usual case is that 95% of human ignores all these types of garbage (waste) and by which we have very uncomfortable environment i.e., presence of toxic gases by waste leads to global warming or unhygienic places leads to different disease.

SWM disposal is at critical stage of development in India. There is a need to develop facilities to treat and dispose of increasing amount of MSW (Municipal Solid Waste). More than 90% of waste in India is believed to be dumped in an unsatisfactory manner. It is estimated that approximately 1400 km² was occupied by waste dumps in 1997 and this is expected to increase in the future, as shown in figure.

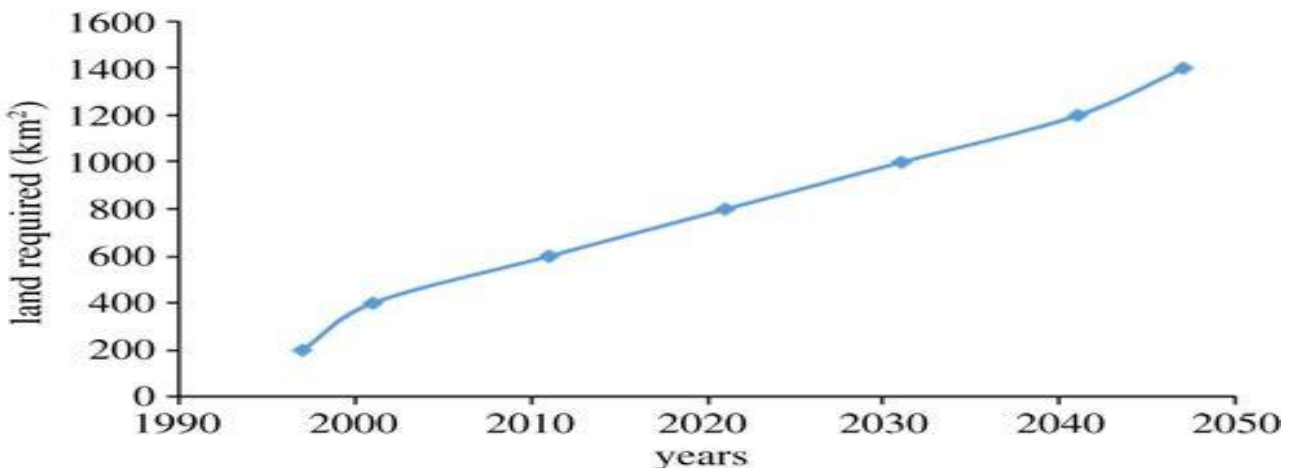


Figure 1 – Land Required for Waste Dumps

In India 31.16% of the population lives in the urban areas (Census of India 2011). India urban population for 2020 was 481,980,332, a 2.32% increase from 2019. India urban population for 2019 was 471,031,529, a 2.33% increase from 2018. But if you believe in what images from satellites tell us about built-up areas, a whopping 63% of India is urban, with urban settlements concentrated in the relatively poorer northern belt. India’s three-tiered census definition of ‘urban’—at least 5,000 inhabitants, density of 400 people per sq. km or more.

The cities in the world generated 2.01 billion tons of solid waste in 2016. This led to the footprint of 0.74kilogram per person per day. And with the present trend going, there is an expected increase in generation of annual waste by 70% from 2016 levels to 3.40 billion tons in 2050 (World Bank, 2018). In India approx 63% of the population lives in the urban areas.

S. No.	City	Population (2011)	Waste Generation (TPD)			
			1999-2000	2004- 2005	2010- 2011	2015- 2016
1.	Mumbai (MH)	12,442,373	5355	5320	6500	11,000
2.	Delhi I	11,034,555	400	5922	6800	8700
3.	Bangalore (KRN)	8,443,675	200	1669	3700	3700
4.	Chennai (TN)	7,088,000	3124	3036	4500	5000
5.	Hyderabad (Tel)	6,731,790	1566	2187	4200	4000
6.	Kolkata (WB)	4,496,694	3692	2653	3670	4000
7.	Surat (GUJ)	4,467,797	900	1000	1200	1680
8.	Pune (MAH)	3,124,458	700	1175	1300	1600
9.	Kanpur (UP)	2,765,348	1200	1100	1600	1500
10.	Visakhapatnam (AP)	2,035,922	300	584	334	350

Table 1: The data depicts the generation of Municipal solid waste in the major metropolitan cities in India since 1999 to 2016

In the above table the data depicts the generation of Municipal solid waste in the major metropolitan cities in India since 1999 to 2016. There is seen an increase in the waste generation in all the cities but in some cities the increase is excessive increase like in Delhi where the increase in the waste generated tons per day (TPD) is highest i.e., difference of 8600 TPD from 1999 to 2016, followed by Mumbai where the difference is 5645 TPD from 1999 to 2016 and

Bangalore where the difference was found to be 3500 TPD. The major reason for such excess increase in the generation of waste in these cities could be their popularity for migration for the reasons like employment, rapid development, better infrastructure, higher education, etc. out of all the above cities as per the census 2011 data Mumbai is most populated followed by Delhi then Bangalore and Chennai. As per World Bank, 2018 1/3rd of solid waste is openly dumped or burned. The MSW is divided into five main types i.e., metal (4%), glass (5%), Plastic (12%), paper/cardboard (17%), food/green (44%). It further adds that over 90% of waste is poorly managed in lowincome countries. This leads to increase in the risk of emissions and disasters, further affecting the poor disproportionately.

Many local bodies have taken initiative for efficient waste collection alongwith certain NGOs having expertise in this sector of Solid Waste Management. It has been observed that waste collection is much greater in metropolitan cities or other urban areas as compared to that of rural areas. States like Gujarat, Maharashtra, Andhra Pradesh, Delhi, Tripura has taken initiatives to increase collection efficiency, while states like Arunachal Pradesh, Nagaland are still not complying MSW Rules, 2000 and following unscientific methods for waste collection transportation (CPCB, 2011). Table – 2 represents the collection rate of different states of India.

Table 2: State wise Waste Collection Data (CPCB, 2012)

State	Quantity Generated (TPD)	Collected (TPD)
Andaman & Nicobar	50	43
Andhra Pradesh	11500	10655
Arunachal Pradesh	94	NA
Assam	1146	807
Bihar	1670	1670
Chandigarh	380	370
Chhattisgarh	1167	1069

Daman Diu & Dadra	28+13=41	NA
Delhi	7384	6796
Goa	193	NA
Gujarat	7379	6744
Haryana	537	NA
Himachal Pradesh	304	275
Jammu & Kashmir	1792	1322
Jharkhand	1710	869
Karnataka	6500	2100
Kerala	8338	1739
Lakshadweep	21	21
Madhya Pradesh	4500	2700
Maharashtra	19204	19204
Manipur	113	93
Meghalaya	285	238
Mizoram	4742	3122
Nagaland	188	140
Orissa	2239	1837
Puducherry	380	NA
Punjab	2794	NA
Rajasthan	5037	NA
Sikkim	40 (capital)	32

Tamil Nadu	12504	11626
Tripura	360	246
Uttar Pradesh	11585	10563
Uttarakhand	752	NA
West Bengal	12557	5054
34 States	127486	89334

Ten years ago, there were 2.9 billion urban residents who generated about 0.64 kg of MSW per person per day (0.68 billion tonnes per year). This report estimates that today these amounts have increased to about 3 billion residents generating 1.2 kg per person per day (1.3 billion tonnes per year). By 2025 this will likely increase to 4.3 billion urban residents generating about 1.42 kg/capita/day of municipal solid waste (2.2 billion tonnes per year) A survey by the Energy and Resources Institute has found that almost 90% felt that improper waste management in India posed a moderate to severe health risk, most usual case is that 95% of human ignores all these types of garbage (waste) and by which we have very uncomfortable environment i.e., presence of toxic gases by waste leads to global warming or unhygienic places leads to different disease.

2.1.1 Types of Waste

From all of the data showed above, we can say that India is a mass developer of different types of waste in its different states and many of the people doesn't know about it, to overcome this concern they must have the knowledge of which type of waste they are creating.

Waste arises in many different forms and its characterisation can be expressed in several forms. Some common characteristics used in the classification of waste includes the physical states, physical properties, reusable potentials, biodegradable potentials, source of production and the degree of environmental impact stated that waste can be classified broadly into three main types according to their physical states; these are liquid, solid and gaseous waste. Although it is clear that several classifications exist in different countries. The most commonly used classifications are illustrated below

- Physical state
 - Solid waste
 - Liquid waste
 - Gaseous waste
- Source
 - Household/Domestic waste
 - Industrial waste
 - Agricultural waste
 - Commercial waste
 - Demolition and construction waste
 - Mining waste
- Environmental impact
 - Hazardous waste
 - Non-hazardous waste

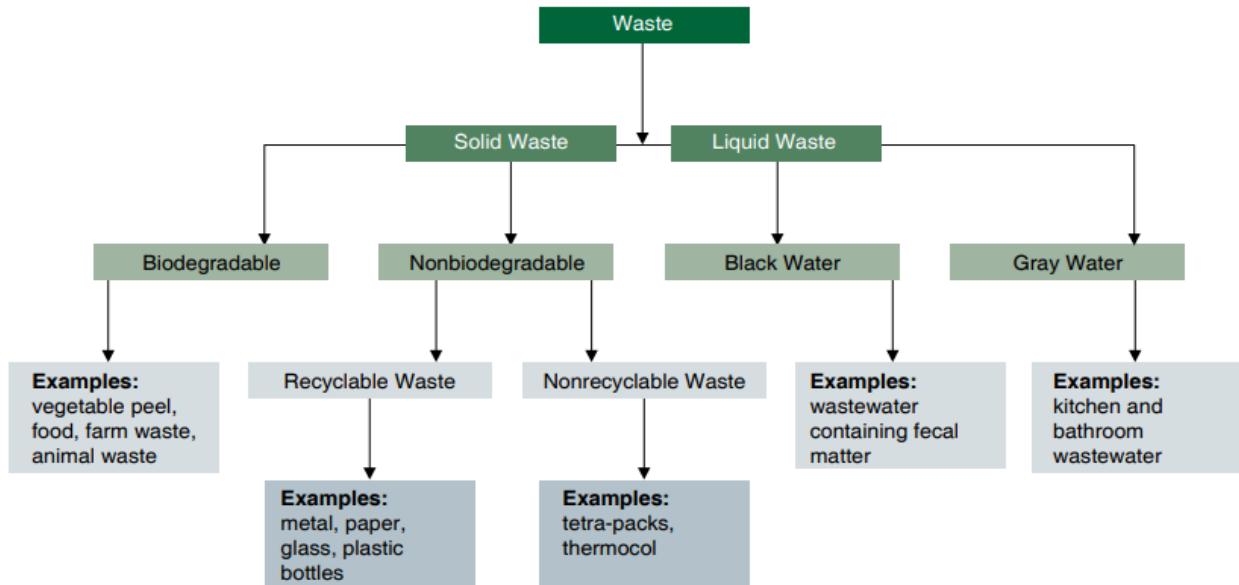


Fig 2: Types of Waste

2.1.2 MANAGEMENT TECHNIQUES

1. Introduction to Solid Waste Management:

- i. Collection including storage, transfer and transport.
- ii. Disposal, including any accompanying treatment.

Waste arises in many different forms and its characterisation can be expressed in several forms. Some common characteristics used in the classification of waste includes the physical states, physical properties, reusable

The collection operation can be sub-divided into two-unit operations, collection and haul. The collection operation consists of removing solid waste from the storage point. The haul operation includes the total round trip travel time (for the vehicle) from the collection route to the (waste) disposal site.

Three alternatives are normally considered for solid waste disposal:

- a) Direct Shipment from municipalities to a sanitary landfill.
- b) Direct Shipment from municipalities to a transfer station where solid waste is transferred to larger vehicles and then shipped for ultimate disposal.
- c) Direct Shipment from municipalities to an incinerator where the solid waste is burned and the residue is shipped for ultimate disposal.

Solid waste management requires an assessment of many complex interactions among transport systems, land use patterns, urban growth and development, and public health considerations.

2. Method of Handling Solid Waste:

- i. Solids, semi-solids, some wet materials, sticky, or tarry substances may be handled by front end loaders or buckets.
- ii. Viscous liquids may be pumped by special pumps.
- iii. Liquids are handled by normal pumping equipment.
- iv. Packages may be handled in cartoons.
- v. Some materials are handled in fiber-pack drums.

3. Salvage and Recovery of Solid Waste:

Many experts feel that only lasting solution for the solid waste disposal problem lies in recycling and reuse of waste:

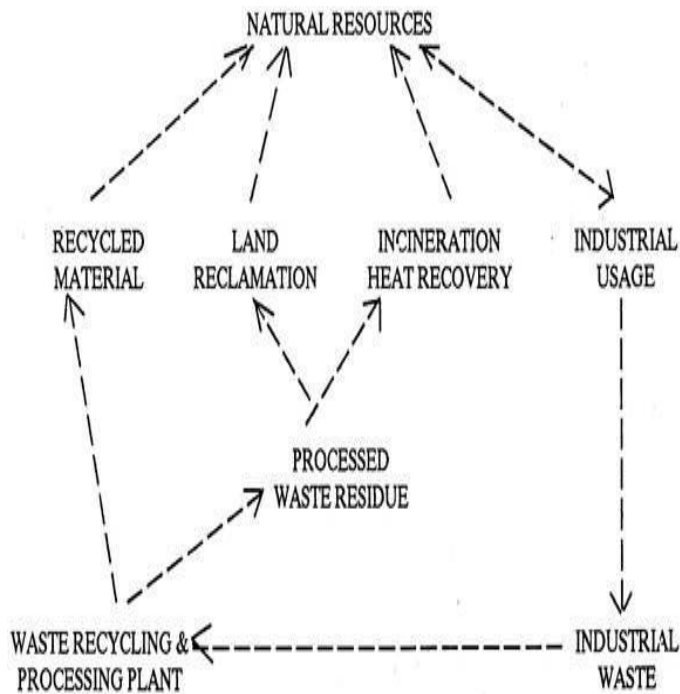


Fig 3: Recycling Industrial Waste

Waste processing has the following advantages:

- i. Added revenue
- ii. Less waste to disposed of.
- iii. Less transport costs of waste.
- iv. Processed residue waste is put into a form which make it suitable for land reclamation.

Steps involved in salvaging and recovery:

- i. Receiving the raw industrial waste and conveying it to a salvage separation area.
- ii. Separating the salvageable materials from waste materials to be further processed.

Ferrous and non-ferrous materials can be separated using magnets, cardboard and paper products can also be removed and placed onto the paper salvage conveyor for entry into the paper processing system.
- iii. Unsalvaged waste residue is conveyed to the main pulverizer unit.
- iv. Compaction system is employed to compact the pulverized residue for disposal.

4. Process of Solid Waste Management:

a) Solid Waste Utilisation:

The developing world cannot afford to waste money. By making good use of solid waste a developing country like India can reap many benefits, for instance

- i. The direct or indirect use of waste contributes to economic development.
- ii. Waste use creates job opportunities.
- iii. Integrated waste poses environmental hazards by transmitting disease and creates air and water pollution.

- iv. Waste utilization helps to produce many useful products that are basic necessities of life.

Resources recovery or waste management is available through three strategies:

- i. Reuse i.e., the given item has multiple uses.
- ii. A recycling that is part of the waste is found to be used in a different way than it was originally used.
- iii. Recycling which means to separate the materials from which a given product is made and to return to the production cycle of the same product.

b) Recycling and reuse of solid waste:

Recycling helps reduce the risk of waste disposal. Recycling is a way of using waste into resources that get used products - both material and energy. As waste costs are expected to rise steadily as a result of rising land prices, and pollution control, resource recovery has become more common and gaining greater favor.

About 70% of the weight of municipal waste from domestic and commercial areas burns. However, only a small percentage of resources are still available.

In some municipal solid waste treatment plants, combustible materials are separated from non-combustible materials. Flammable substances are burned and burned in auxiliary boilers or industrial boilers as a primary fuel or as a supplement to fossil fuel. This type of solid waste processing operation is known as a waste-based fuel system (RDF), RDF is used to add other fuel sources at a rate of 20% RDF to 80% soils fuels.

It was reported that 29 RDF systems were operated in the USA to generate electricity in 1983. It processes 1250 tons to 18,000 tons of litter per week. Incineration and RDF technology seem to be at odds over cost. Plastic waste or garbage should be collected from consumers or picked up on the way from customers to municipal refuse site.

5. Consideration for solid waste management:

The major considerations for solid waste management are:

- a) Public health,
- b) Waste disposal for recycling, and
- c) Restoration of power.

A. Public Health:

Under warm and humid conditions, and especially with the help of vectors (carriers) such as water, air, food, rats, mosquitoes and flies, solid living debris is an ideal breeding ground for pathogenic organisms.

Hazardous substances such as solvent and pesticide cans, medical waste and asbestos debris present in solid waste, air pollution from gaseous gases and particles from landfill sites and municipal burns, etc.

In addition, solid waste management strategies should also address groundwater quality degradation due to landfill of solid waste, residues from incinerators and leachates from decomposing refuse.

B. Waste Separation for Recovery and Recycling:

Recovery and recycling of resources in solid waste, even if the attractive concept is very difficult to practice. Expensive materials such as other metals have been found to be cost-effective for industrial use. Recyclable bottles and recyclable cans can be recycled from municipal waste.

The separation of waste source is allowed and only occurs when recycled items find a suitable market. However, this concept of resource allocation is gaining increasing attention in other

developed countries due to declining waste disposal, economic incentives, improved recycling markets, environmental concerns and political will.

C. Energy Recovery:

Energy recovery from municipal waste can be achieved in the following two ways:

(i) Solid waste can be burned directly in a incinerator or converted into efficient “refused drive fuel” (RDF). The decomposition of pyrolysis and organic anaerobic in solid waste is another available method of recovering solid fuel waste.

(ii) Reusing of solid waste is another major energy saving method. Clearly, mining and the manufacture of stainless steel from the use of iron ore have so much power that the use of these metals is certainly appropriate from the energy conservation area.

6. Recycling of Waste Materials:

Crushing of materials:

- Thermal decomposition of waste organic in the form of gas and oil getting food sources such as livestock from organic waste.
- Melting plastic and moulding.
- Melting blast furnace slag for making artificial jewelry converting waste in solid fuel.
- Compositing garbage and using as manure.
- Using refuse for landfill

Materials products made from waste:

- Water work silt.

- Red mud from Aluminum industries.
- Sugar industry waste
- Agricultural waste: Paper, paper board, coconut, arece-nut, cashew-nut, fly-ash.
- A tonne of solid waste processed by pyrolysis is believed to produce as much energy as one barrel of oil. The city of Baltimore reportedly used a commercial site in 1975 to produce 4.8 million kilograms of steam daily from low BTU electricity generated by the municipal solid waste pyrolysis.
- As many as 357,000 barrels of oil were stored annually, in addition to the proceeds from the metalworking and the adjoining glass for sale and for the construction of canoe racing and street construction. The economic viability of a complete commercial pyrolysis site is still undoubtedly proven. The advantage of pyrolysis is that it produces energy that is easy to use and mobile.

The Need for an Appropriate Waste Management Program:

In order to successfully implement an effective waste management plan, it is necessary to have a comprehensive approach to this problem. This could mean conducting a public awareness campaign, setting up a series of recycled plastic waste, heaters or recycling units.

Instead of launching campaigns like “Ban Plastics” or “Use No Plastics” we should educate people to spread the word to avoid bad waste disposal practices in the community. We must have "Ban Littering" campaigns and "punishment for the Litters".

In any of these campaigns or the establishment of disposal schemes, the participation of Government, industry and civil society is of paramount importance. In this case, it would be good to consider the establishment of model cities for the garbage disposal system in large areas of plastic use.

The plan must include waste disposal, collection, segregation, processing and recycling, in addition to public awareness campaigns on waste disposal practices and compliance with

scientific disposal programs. The plastics industry has to contend with this concept in order to give it a final say. These cities will serve as role models for others. We can also take an idea from the Western world about mechanical management and disposal systems.

Another thing that needs to be considered is the establishment of a recycling product development center and a scientific waste management system, which can be a center for recycling and recycling of plastics. Because once we have shown the way to people in the industry how to create a profit to make a different product from waste, the magnitude of the problem can be greatly reduced. Polymer manufacturers including GAIL can extend their industry support to this.

Another important issue for the industry to consider is the destruction of plastics. This is going to be a real challenge for the scientific community and any breakthrough in this field could be of great help to the plastic industry.

It is appropriate here to quote an interesting fact from a report in a study published by the International Energy Agency, in Paris on the release of carbon di oxide. According to the study, CO per capita, emissions are 0.91 MT in India. It is 20.46 MT in the USA and surprisingly high at 63.11 MT in Qatar, a small country.

The global average is 3.88 MT. indeed, we are far ahead, compared to other countries. There is a tremendous amount of protection in our environment when we take precautionary measures in place. Environmental issues must be addressed with the right perspective by bringing technology to our Environmental Management Strategy. It wants as much attention as our business.

Solid Waste Management in Developing Countries:

The protection of health and the environment through the proper management of solid municipal waste is beginning to gain importance in developing economies (DCs). Unregulated and improper management and disposal of solid municipal waste and wastewater sources are major threats to public health and environmental quality in DCs.

While these risks are very real, pollution control and environmental improvements have historically been marginalized at most DCs, while government policies emphasize industrial development.

Recently, however, environmental quality in many DCs has declined to the point where it can no longer be ignored. The result has been a great deal of concern and intensification in efforts to find and implement ways to reverse the deterioration and to enhance the quality of the environment to an acceptable level.

Disposal of Hazardous Waste:

Important sources of commercial hazardous waste such as:

(i) Hospital injections or anatomic waste, harsh chemicals, such as liquid or synthetic chemicals, outdated and contaminated drugs or other substances,

(ii) Industry - Typices of treatment options and

(a) Chemical and physical therapies - the distinction of amazing alcoholic beverages, detoxification, natural reactions.

(b) Therapeutic therapies include physiolysis and incineration pyrolysis used infrequently. The main advantage is that the volume of the smelling particle that has to be cleaned badly so that the time it passes the decomposing gas and the lungs is a great experience for the residue to continue. Competing in the effort is a gas used as a gasoline gas where in most cases a direct fire ion is prepared.

(c) Disposal is the only disposal method in which an item cannot be damaged by fire. Soil disposal is done by underground dumping or underground sealing system should be the mainstay to prevent rainwater infiltration into the depths and contamination of groundwater by planting plants C snatching combined with layers of water pipes and mineral layers and melance surface and bar.

2.2 Product Design

As we already know the product we are designing is an Android Application. We will make an app which works according to the figure given below :-

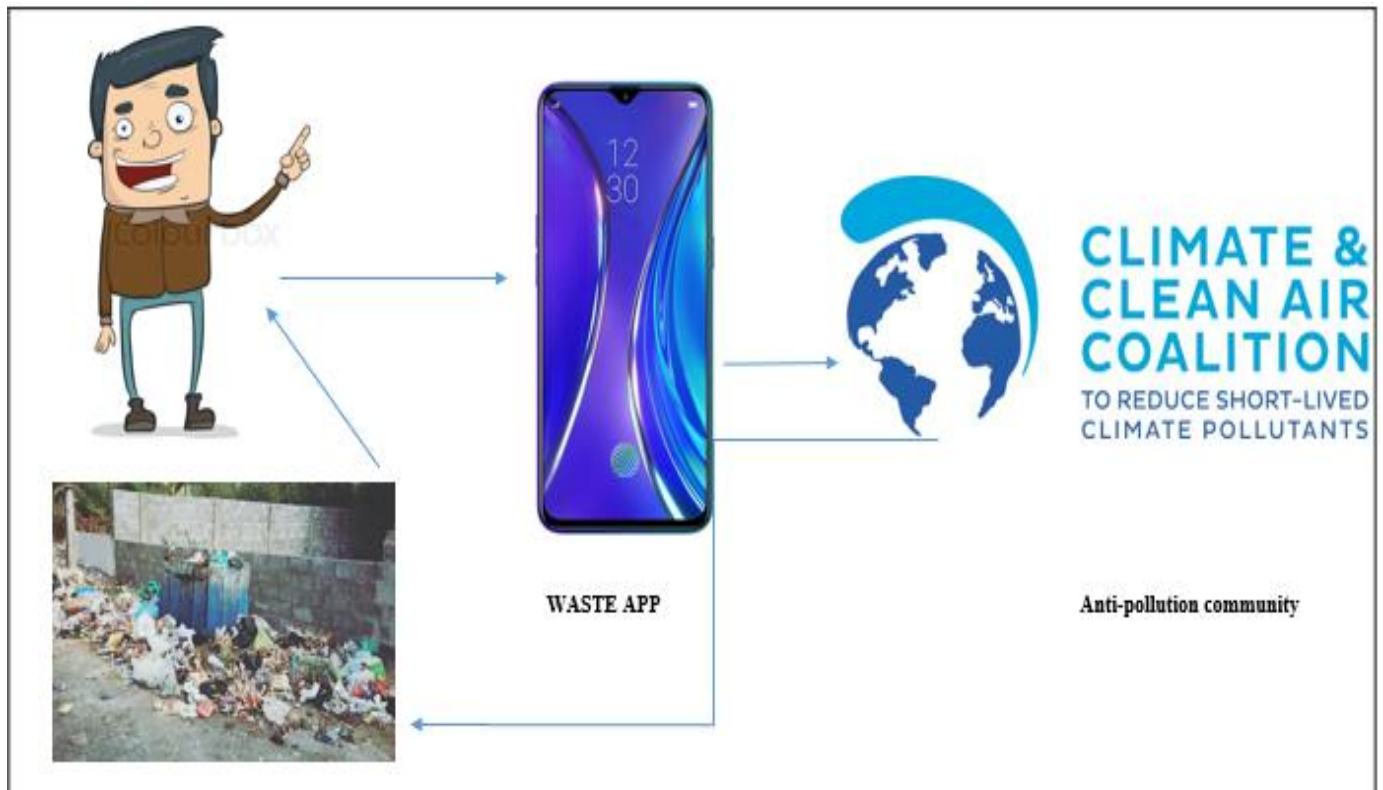


Fig 4: Proposed Plan for WASTE Application

From the above picture we can understand that how the app works –

- 1) User will register in the app and will be verified.
- 2) User will upload pictures and videos and give information of the area condition.
- 3) Government or Private Waste Management Sectors will check the area and after that they will take appropriate action for that area i.e., they will give the work to the company either Private or Government.

- 4) Revenue collection will be done after work has done and the app take his 5% money deduction and from it, app will provide coupons or cash to the user.
- 5) All the measures will be recorded in app i.e., the information given by user is correct and give the user promotion and if wrong the user will be terminated.
- 6) If information is correct and any sector or company come to do the work, their working style will also be measured. If the work is fine enough, they will also be promoted to fine working list otherwise they will get demoted i.e., their review will be marked as bad and they will not present in recommending list.
- 7) All the work will be posted regularly on social media platforms like Facebook & Instagram etc.
- 8) Required Tools
 - a) Programming Language – Java,
 - b) Software – Android Studio
 - c) Good Laptop or PC and Internet Connection

We use these tools to make our app such as Java need for programming of the app, Android Studio will be used for constructing the app as all the coding, font styles, adding different sections, background & many more all these things can only be edited on Android Studio.

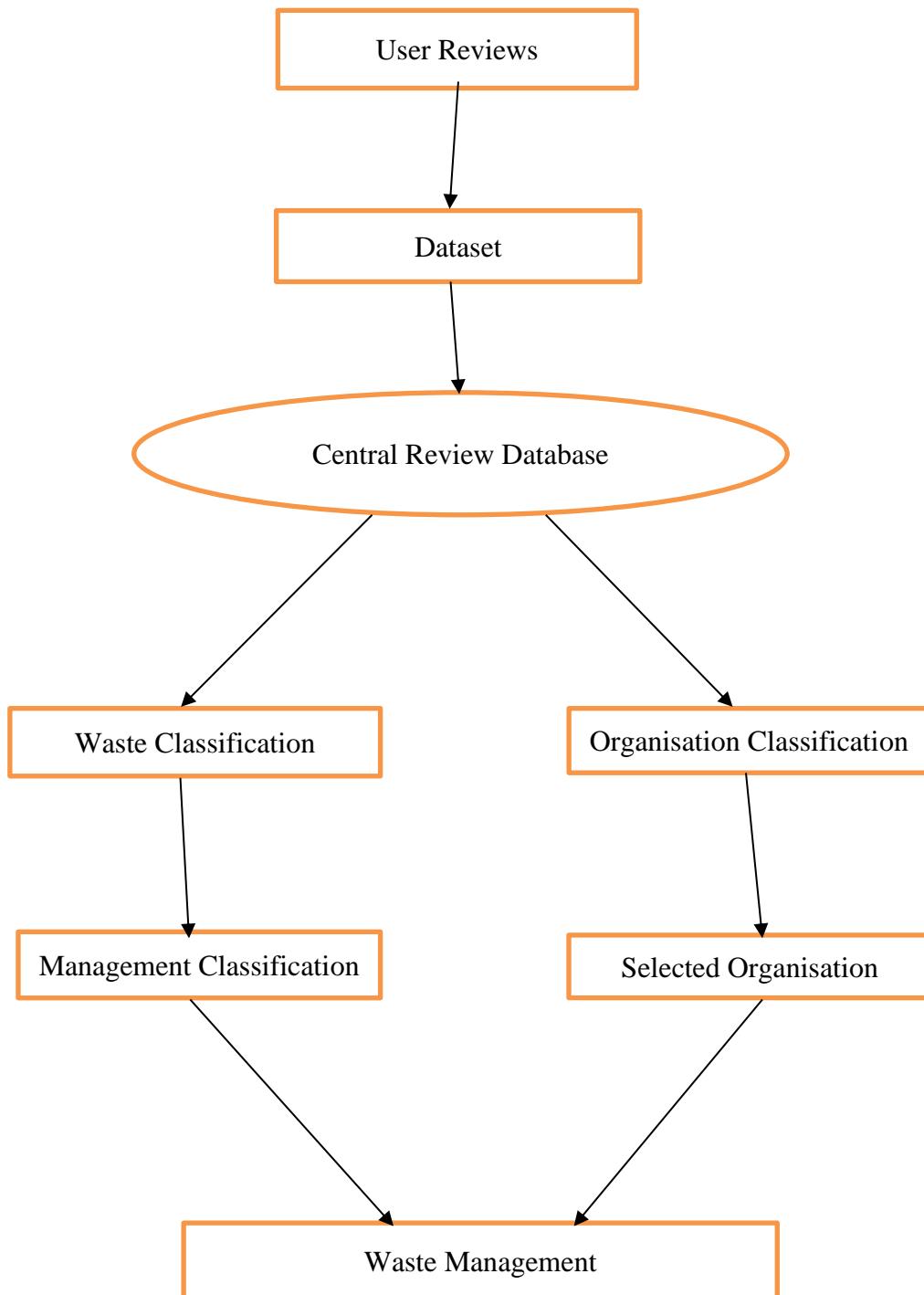
Laptop, desktop or PC's we need this thing because without it we can't do anything as Android Studio is an PC software which run in computers. Without Internet we can't publish it to the World Wide Web and for smooth working of app we need an Internet connection as to handle information from different users.

CHAPTER-3

FUNCTIONALITY/WORKING OF THE PROJECT

3.1 FUNCTIONALITY

3.1.1 Workflow Diagram



3.1.2 Firebase

Firebase is a platform developed by Google for creating mobile and web applications. It was originally an independent company founded in 2011. In 2014, Google acquired the platform and it is now their flagship offering for app development. It is a Backend-as-a-Service (Baas). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. It is built on Google's infrastructure.

Key Features

1. Authentication

It supports authentication using passwords, phone numbers, Google, Facebook, Twitter, and more. The Firebase Authentication (SDK) can be used to manually integrate one or more sign-in methods into an app.

2. Realtime database

Data is synced across all clients in realtime and remains available even when an app goes offline.

3. Hosting

Firebase Hosting provides fast hosting for a web app; content is cached into content delivery networks worldwide.

4. Test lab

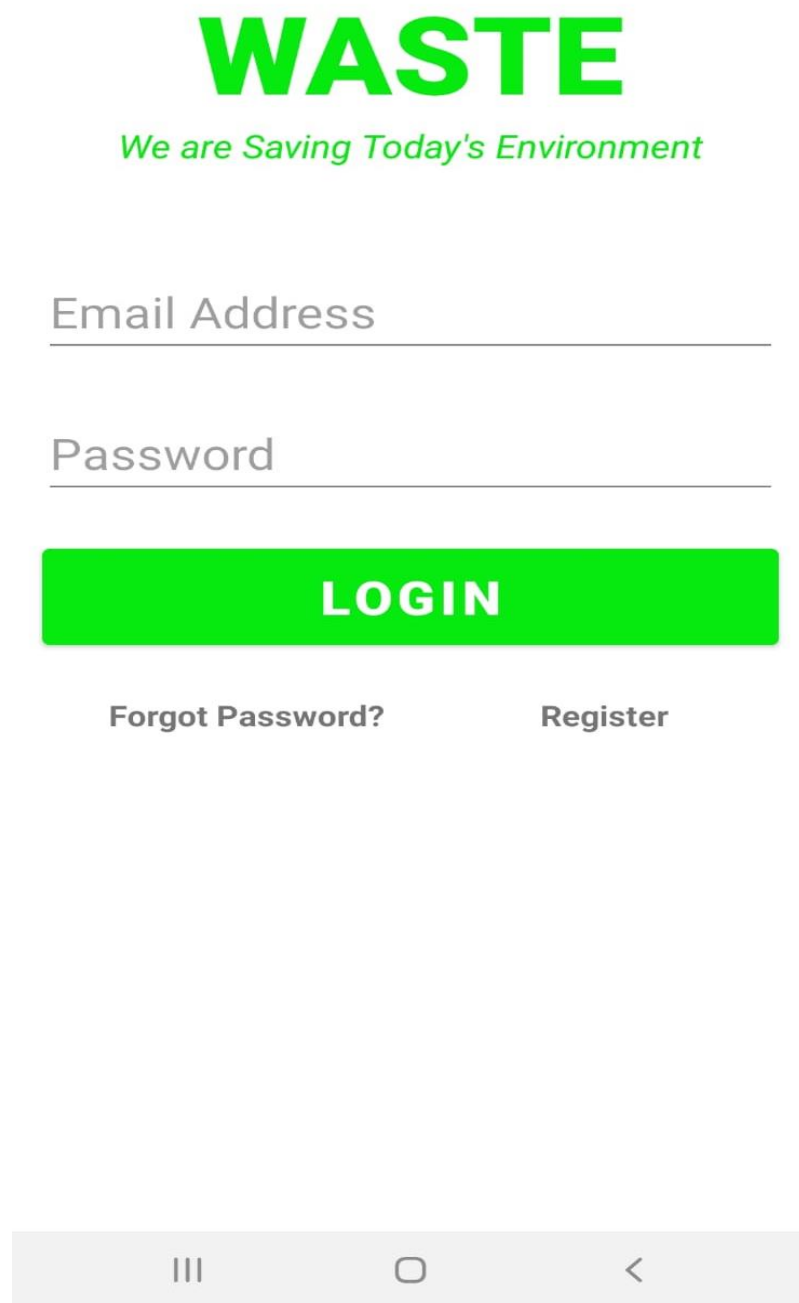
The application is tested on virtual and physical devices located in Google's data centers.

5. Notifications

Notifications can be sent with firebase with no additional coding.

3.2 Working of the Project

3.2.1 Login



WASTE
We are Saving Today's Environment

Email Address _____

Password _____

LOGIN

[Forgot Password?](#) [Register](#)

III ○ <

The image shows a login form for a project named 'WASTE'. The title 'WASTE' is in large, bold, green letters, with the tagline 'We are Saving Today's Environment' in a smaller, italicized green font below it. There are two input fields: 'Email Address' and 'Password', each with a horizontal line underneath. Below the input fields is a prominent green button with the word 'LOGIN' in white, bold, uppercase letters. Underneath the button are two links: 'Forgot Password?' and 'Register'. At the bottom of the form, there is a light gray bar containing three navigation icons: three vertical bars (hamburger menu), a circle, and a left-pointing arrow.

Fig 6: Login

3.2.2 REGISTER

WASTE

We are Saving Today's Environment

Full Name

Age

Email Address

Password

REGISTER USER

|||

○

<

Fig 7: Register

3.2.3 HOME - WELCOME

WELCOME

In this app,we collect the data of different types of Garbage.



After collecting the data ,we send the data to the Waste Management Companies and they check the data by sending their workers to the registered place by collecting the garbage.



NEXT



Fig 8: Home- Welcome

3.2.4 RECYCLE

RECYCLE

*Then the Waste Management Companies
Recycle the Garbage with their techniques*



*To upload the image of the the garbage near
you tap on the button given below*

UPLOAD GARBAGE IMAGE



Fig 9: RECYCLE

3.2.5 IMAGE UPLOAD

UPLOAD IMAGE



SELECT IMAGE

UPLOAD IMAGE



Fig 10: Image Upload

3.2.6 FORGOT PASSWORD

WASTE

We are Saving Today's Environment

Email Address

RESET PASSWORD



Fig 11: Forgot Password

LOGIN

This activity is for sign in of user into the app. In this user provide its registered Email Id & Password and then the user clicks on the LOGIN button after that the email id and password with realtime database of the Firebase.

If the given Email Id and Password is correct then the user will forward to see the next activity i.e., Welcome -Home, else the Email Id and Password is wrong, it will show an error – Email Id is not registered, wrong email id or password, please check your credentials.

REGSITER

This activity is for the users who hasn't registered on the app, for it they have to provide their Full Name, Age, Email and Password for the registration, then the user goes to login activity and enter his Email Id and Password, for the user login for first time, the app will send a Verification Mail to their registered email. User have to click on the link in the mail for their final verifiacion. Now, User can login with ease.

HOME – WELCOME

When the user successfully does login, User moves to the WELCOME activity in which basic details about the app is showed. There is also a button name as NEXT on clicking user goes to next activity which is RECYCLE.

RECYCLE

After clicking on the NEXT button in WELCOME activity user comes into this activity which contains Recycling details by the Waste Management Company and in the bottom the activity also contains a button UPLOAD GARBAGE IMAGE by clicking on that button, the user moves to the activity for uploading image of the Garbage.

UPLOAD IMAGE

In this activity the user can upload the image of Garbages near them by clicking on the button SELECT IMAGE, it will open the gallery to select the image user want to upload, after that the image will be show at the activity and then user will click on the UPLOAD IMAGE button which will upload the Image of the Garbage into Database of the Firebase with the specific time and date.

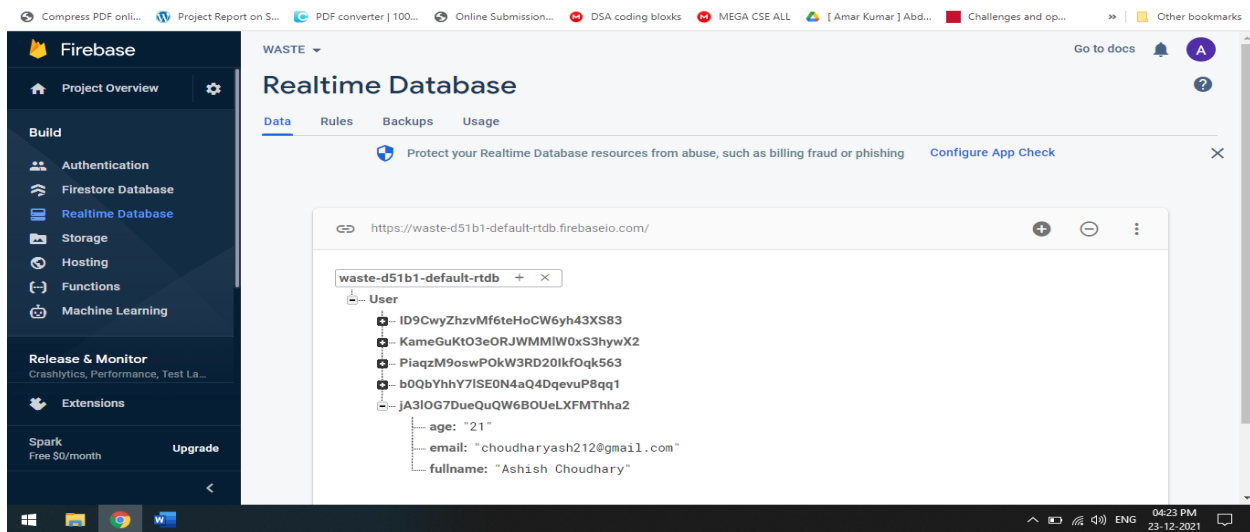
FORGOT PASSWORD

This activity is for the user in any case forget his password, and can't able to login, then he can use FORGOT PASSWORD activity by clicking on the text on LOGIN activity and he will jump into it. User have to provide his registered email id other than that it will show error for wrong email id or unregistered email id.

If the Email Id provided by the user is correct, the app will send a reset password mail to his email id and in that mail, there will be a link to reset or change the password.

Firestore Realtime Database

For User Database



The screenshot displays the Firebase Realtime Database console for a project named 'WASTE'. The left sidebar shows the project overview and various services like Authentication, Firestore Database, Realtime Database, Storage, Hosting, Functions, and Machine Learning. The main area shows the Realtime Database structure with a 'User' node containing a list of user IDs and their details. The user details for the selected user are:

```
{
  "age": "21",
  "email": "choudharyash212@gmail.com",
  "fullname": "Ashish Choudhary"
}
```

For Image Database

The screenshot shows the Firebase Storage console for a project named 'WASTE'. The left sidebar contains navigation options: Project Overview, Build (Authentication, Firestore Database, Realtime Database, Storage, Hosting, Functions, Machine Learning), Release & Monitor, and Spark. The main area displays the 'Storage' page with a table of files. A file named '2021_12_23_16_26_46' is selected, and its details are shown in a preview pane on the right. The preview pane includes the file name, size (59,610 bytes), and a thumbnail image of a trash bin.

Name	Size	Type	Last modified
2021_12_23_01_28_27	80.82 KB	image/jpeg	Dec 23, 2021
2021_12_23_16_26_46	58.21 KB	image/jpeg	Dec 23, 2021

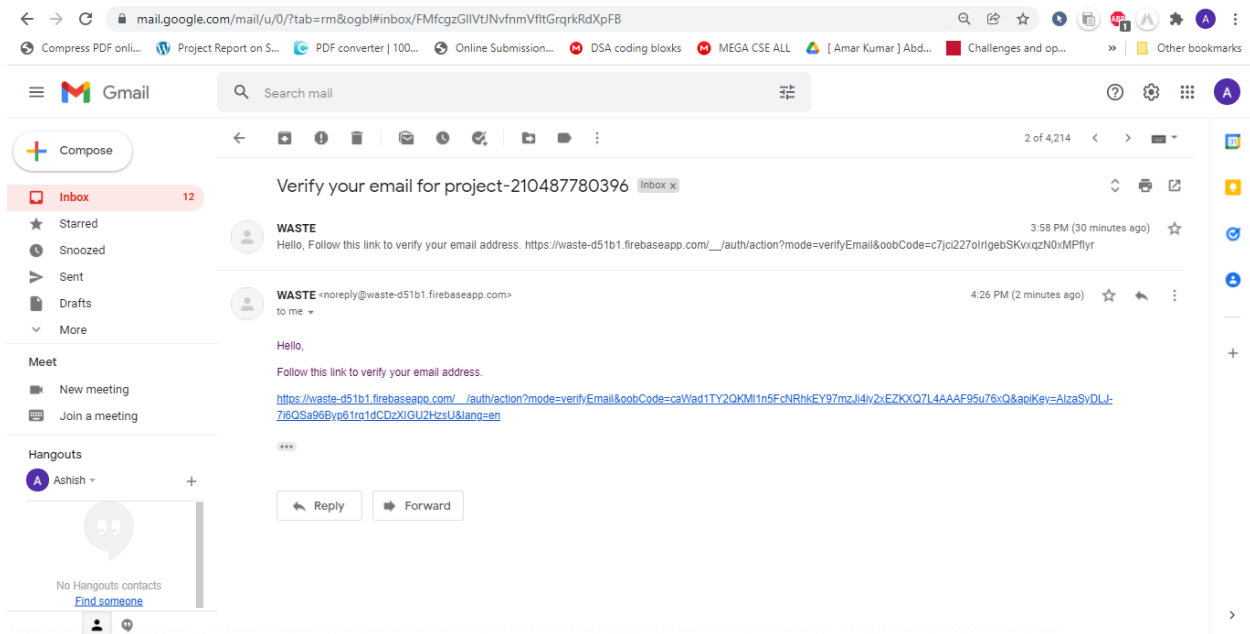
File details for '2021_12_23_16_26_46':
Name: 2021_12_23_16_26_46
Size: 59,610 bytes

This screenshot shows the same Firebase Storage console, but with the file details pane expanded to show metadata. The file name is '2021_12_23_16_26_46', size is 59,610 bytes, and type is 'image/jpeg'. The 'Created' and 'Updated' timestamps are both 'Dec 23, 2021, 4:26:51 PM'. The 'File location' and 'Other metadata' sections are collapsed.

Name	Size	Type	Last modified
2021_12_23_01_28_27	80.82 KB	image/jpeg	Dec 23, 2021
2021_12_23_16_26_46	58.21 KB	image/jpeg	Dec 23, 2021

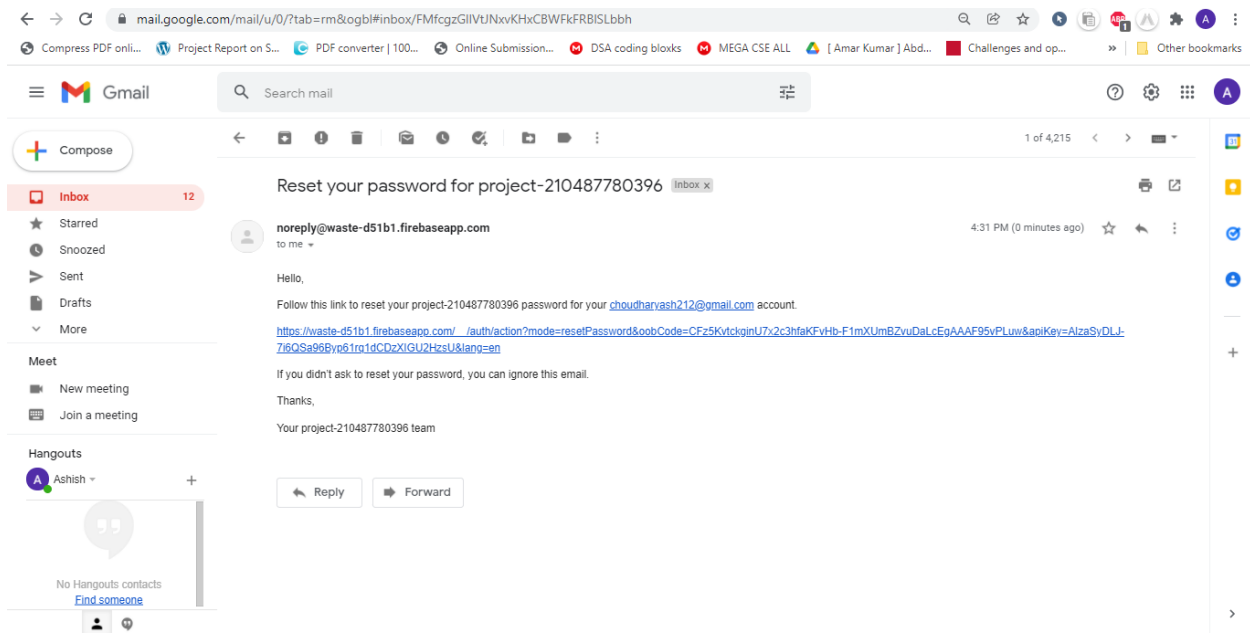
File details for '2021_12_23_16_26_46':
Name: 2021_12_23_16_26_46
Size: 59,610 bytes
Type: image/jpeg
Created: Dec 23, 2021, 4:26:51 PM
Updated: Dec 23, 2021, 4:26:51 PM

Email Verification Mail



Reset Password Email

Email of the reset password to change the password send by Firebase Database.



Reset Password Link

Link to change or reset the password

Reset your password

for choudharyash212@gmail.com

New password

SAVE

Password Successfully Changed

The password of the user has been changed.

Password changed

You can now sign in with your new password

PROJECT PLAN/DURATION (Time Line)

Table 3: PROJECT PLAN/DURATION

<u>Sr. No.</u>	<u>Activity /Objective</u>	<u>Duration</u>
<u>1.</u>	<u>APP PUBLISHING AND HANDLING</u>	<u>10-15 days</u>
<u>2.</u>	<u>GOVERNMENT OR PRIVATE ANTI-POLLUTION COMMUNITY CONNECTION WITH APP</u>	<u>6-7 day</u>
<u>3.</u>	<u>USER INTERACTION AND TELLING PROBLEM OF WASTE DIALY</u>	<u>1 day</u>
<u>4.</u>	<u>ANTI-POLLUTION COMMUNITY ACTION UNDERTAKING ACC TO LOCATION</u>	<u>2-3 hours</u>
<u>5.</u>	<u>SENDING WORKERS TO CLEAN THE PLACE</u>	<u>6-10 hours</u>

PROPOSED BUDEGT

Sr. No.	Item			Amount
1.	SMARTPHONE	EVERYONE HAVE		-
2.	APPLICATION(WASTE)	EASILLY INSTABLE		-
3.	GOVERNMENT OR PRIVATE ANTI-POLLUTION COMMUNITY	ACCORDING TO CONDITION		-
4.	APP PUBLISHING AND HANDLING			25\$
Grand Total				25\$

Table 4: Proposed Budget

CHAPTER-4

RESULT & DISCUSSION

Result

From the described working of the application in which there is User Login or Register and then Login, moving to the Welcome activity having details about the app and then to Recycle activity which display the recycling by the Waste Management Companies and after that uploading the image of the Garbage to the Database with their specific date and time. By this activity we would see a change in our social life's, the environment around us will be clean and we can use that hygienic place for different useful purposes. This app will go to the many sections of the society, small to big everywhere, where people would like to check whether they get their requirements met near them. This will help them to save their time and cost. This app will rank different workers/companies according to the reviews and ratings given by the users, this will motivate them to provide good service.

Discussion

Solid waste management has been a major issue since decades in the cities and the situation continue to aggravate with time due to continuous development and increase in population. In order to make the cities livable sustainable management of waste is needed. There should be community mobilization to sensitize them towards their contribution in waste management, increase in the better infrastructure for the MSW management, sanitary and monitored landfill sites and also waste to energy technologies to be promoted. Being one of the most populous country and fastest growing economy, India can not afford to ineffective solid waste management. It seems that policy framework is available only on paper, but ground reality is alarming one. Poor waste management practice must be shifted to scientific approach. Waste Collection and Waste Segregation are two components of SWM which require prior attention and can open up market for waste management sector. However, for source reduction, public awareness is equally important.

CHAPTER-5

CONCLUSION & FUTURE SCOPE

5.1 Conclusion

Despite the fact that Solid waste management practices has been improving in recent years, the pace of improvement needs to be accelerated. Measures mentioned in MSW rules must be implemented. Time has come to encourage technology based entrepreneurship to achieve effective solid waste management. NGOs should be involved in various components of waste management including public awareness. Public involvement in management of solid waste is of significant importance. Authorities must protect fundamental right of citizens by implementing best practices and citizens must perform fundamental duties by their contribution to those practices. The amount of waste remaining after treatment should be disposed of in closed landfills. Not only in Urban cities, Effective Solid Waste Management should be implemented to rural areas as well. Government has taken various initiatives to improve waste management services, but there is still a long journey to travel to achieve the objectives of effective municipal solid waste management. The WASTE application will provide many peoples knowledge about the waste management techniques and how to connect to different organisations & companies with the benefits of getting rid of the waste.

5.2 FUTURE SCOPE

This app contains only connecting to the user not to the Waste Management Organisation who take care of these activities by doing recycling, landfilling of the garbage etc. In future this app will have large growth as everyone uses smaartphone and after we will also be directly able to connect with organisation and companies. For waste management government with support of local authorities has accelerated the implementation of better waste management practices. Various NGOs play a vital role in spreading awareness among public and involve citizens for better waste management practices. The most recent initiative is ‘Swachchh Bharat Abhiyan’, also known as ‘Clean India Mission’. One of the objectives of this initiative is to aware citizens about the importance of proper waste management approach.

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Author*: Ashish Choudhary ,Adarsh Chaudhary ,Suman Devi

Email*: choudharyash212@gmail.com

Abstract*:

In order to protect private, cooperative, and government online information systems and prevent them from threats that penetrating organizations should use flexible, intelligent cybersecurity technologies. Artificial intelligence (AI), machine learning, blockchain, predictive defense, and cloud computing are few industries emerging technologies. Likewise, security operations centers (SOCs) must also increase present developed security techniques to conquer protection issues. These security techniques should develop the future of advanced cyber security protocols for every user. Cyber Security has a key aspect in the plot of information technology. Saving the data have become one of the biggest work in the present era. At any time, we think about the cyber security the first concept that occurs in our mind is 'cyber crimes' which are increasing more day by day. Different governments and organization are doing many measures in order to stop these cyber-crimes. Exclusive of various covers cyber security is still a large concern to many. This paper focuses on difficulties faced by cyber security on the latest developed technologies. It also focuses on latest cyber security techniques changing the face of cyber security. The developing cybersecurity threat is overbearing efforts from a defensive workstyle. A cyber-attack is visualized by the multiplication of cyber-threats, which is impossible to occur – except for a digger situation between nations or states. There is a belief developing within cybersecurity that restricts the excessive damages of cyberattacks. Organizations which successfully created defensive techniques may even decide to generalize them to give access to the world. This new era increases the emergence of secure cyber defense networks, including private cybersecurity groups, university research centers, start-ups, corporations, public institutions, etc. Keywords—Cyber Security, Cyber Crime, Blockchain, IOT, AI, Cloud Computing, Ransomware, Phishing, Malware, AntiVirus.

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